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SUMMARY

As a senior scientific engineer associate, I provide interdisciplinary supports on various research projects. I setup experimental systems, develop and verify analytical methods, formulate chemical compounds and solutions, and conduct instrumental analyses along with their maintenance and troubleshooting. Also, I manage the laboratories in good working condition and keep the laboratories in 100% HSE compliance. In addition, I provide required training for newly hired group members.

Keywords: Research and Development; Formulation; Characterization; Interdisciplinary performance; Strong chemistry background; Instrumental analyses; Development of Analytical Methods; Collaboration; Design of Experiment; Lab Manager; Safety Compliance

INSTRUMENTAL SKILLS

1. Electron microscopy: SEM-EDAX /TEM
2. Elemental analysis: ICP-MS / ICP-OES / TOC-TIC / LSC / KPA
3. Chromatography: GC / HPLC / GC-MS/ IC / GPC
4. Spectroscopy: FTIR-DRIFT / UV-VIS / XRD / micro-XRD / XRF / NMR / MS
5. Thermal analysis: TGA / DTG / DSC
6. Others: / DLS / BET / Auto-titrator / pH meter / Turbidimeter / Microscopy / High Pressure System / Vacuum system / Ultracentrifuge

PROFESSIONAL EXPERIENCE

09/2007 - present: Senior Scientific Engineer Associate,
Lawrence Berkeley National Laboratory (1 Cyclotron Road, Berkeley, California, 94720)

- Investigate possible utilization of natural organic matters on enhanced oil recovery in combination with geological CO₂ storage.
- Develop analytical methods for characterizing aqueous uranyl vanadate compounds in various oxic & pH conditions. Total 48 batches were prepared and managed for investigating uranium vanadate precipitation.
- Develop and test analytical methods for vanadium analyses in aqueous mixture.
- Collaborate with scientists in Molecular Foundry (Berkeley, CA) to prepare and characterize engineered nanoparticles.
- Effects of cation/concentration/salinity/pH on the stability of nanoparticles were studied.

09/2006 - 08/2007: Principal Research Associate,
Lawrence Berkeley National Laboratory (1 Cyclotron Road, Berkeley, California, 94720)

- Formulate chemical compounds for organic carbon supply in synthetic ground water and manage continuously ongoing column experiments.

- Anaerobically take soil samples from 32 soil packed columns and characterize them for studying redox change of Fe, Mn, S, and U.
- Formulate chemical compounds for studying vanadium adsorption on soil sediments in various oxic & pH conditions.
- Prepare and manage batch experiment sets for long term (more than 1 year) period.

05/2005 - 08/2006: Senior Research Associate,

Lawrence Berkeley National Laboratory (1 Cyclotron Road, Berkeley, California, 94720)

- Conduct soil-packed column experiments for studying redox changes of uranium and its transport through saturated sediments.
- Formulate chemical compounds for synthetic uranium waste solution to simulate the historical Hanford uranium spill event.
- Run experiments for investigating reactive transport of uranium in the Hanford vadose zone.
- Contribute on developing analytical methods for exploratory studies on soil carbon storage.

08/2000 - 05/2005: Research Assistant,

University of Southern California (925 Bloom Walk Street, Los Angeles, California, 90089)

- Characterize thermal properties of double layered clay minerals.
- Test adsorption properties of the double layered clay minerals under CO₂ atmosphere.
- Formulate chemical compounds for synthetic clay minerals and characterize the products for verification.
- Develop membrane preparation method with the double layered clay minerals and test transport properties of the prepared membranes.

3/1/1997 - 2/28/1999: Research Assistant,

Seoul National University (1 Gwanak-ro, Gwanak-gu, Seoul, South Korea)

- Develop synthetic method for hyper-branched polymer.
- Formulate chemical reagents for multi-step reactions and optimize their compositions for higher yield.
- Characterize the synthesized polymer with various analytical instruments including photo luminescence, UV-VIS, GPC, NMR, and FT-IR.

EDUCATION

08/21/2000 - 05/28/2006: University of Southern California, Los Angeles, California, United States
Doctorate, Major: Chemical Engineering

03/01/1997 - 02/28/1999: Seoul National University, Seoul, South Korea
Master of Science, Major: Chemical Technology

03/01/1993 - 02/28/1997: Seoul National University, Seoul, South Korea
Bachelor of Science, Major: Chemical Technology

PUBLICATIONS

Weishen Yang, **Yongman Kim**, Paul K. T. Liu, Muhammad Sahimi, and Theodore T. Tsotsis; A study by in situ techniques of the thermal evolution of the structure of a Mg-Al-CO₃ layered double hydroxide, *Chemical Engineering Science*, 57(15), 2945-2953, **2002**.

Yongman Kim, Weishen Yang, Paul K. T. Liu, Muhammad Sahimi, and Theodore T. Tsotsis; Thermal evolution of the structure of a Mg-Al-CO₃ layered double hydroxide: sorption reversibility aspects, *Industrial & Engineering Chemistry Research*, 43(16), 4559-4570, **2004**.

Nayong Kim, **Yongman Kim**, Theodore T. Tsotsis, and Muhammad Sahimi; Atomistic simulation of nanoporous layered double hydroxide materials and their properties. I. Structural modeling, *Journal of Chemical Physics*, 122(21), Art. No. 214713, **2005**.

Jiamin Wan, Tetsu K. Tokunaga, **Yongman Kim**, and R. Jeffrey Serne; Effect of saline waste solution infiltration rate on uranium retention and spatial distribution in Hanford sediments, *Environmental Science and Technology*, 42(6), 1973-1978, **2008**.

Tetsu K. Tokunaga, Jiamin Wan, **Yongman Kim**, Steve R. Sutton, Matthew Newville, Antonio Lanzirotti, and William Rao; Real-time X-ray absorption spectroscopy of uranium, iron, and manganese in contaminated sediments during bioreduction, *Environmental Science and Technology*, 42(8), 2839-2844, **2008**.

Jiamin Wan, Tetsu K. Tokunaga, **Yongman Kim**, Eoin Brodie, Rebecca Daly, Terry C. Hazen, and Mary K. Firestone; Effect of organic carbon supply rates on uranium mobility in a previously bioreduced contaminated sediment, *Environmental Science and Technology*, 42(20), 7573-7579, **2008**.

Tetsu K. Tokunaga, Jiamin Wan, **Yongman Kim**, Rebecca Daly, Eoin Brodie, Terry C. Hazen, and Mary K. Firestone; Influence of organic carbon supply rate on uranium bioreduction in initially oxidizing, contaminated sediment, *Environmental Science and Technology*, 42(23), 8901-8907, **2008**.

Jiamin Wan, **Yongman Kim**, Tetsu K. Tokunaga, Zheming Wang, Suvasis, Dixit, Carl Steefel, Eduardo Saiz, Martin Kunz, and Nobumichi Tamura; Spatially Resolved U(VI) Partitioning and Speciation: Implications for Plume Scale Behavior of Contaminant U in the Hanford Vadose Zone, *Environmental Science and Technology*, 43(7), 2247-2253, **2009**.

Tetsu K. Tokunaga, **Yongman Kim**, and Jiamin Wan, Potential Remediation Approach for Uranium-contaminated Groundwaters Through Potassium Uranyl Vanadate Precipitation, *Environmental Science and Technology*, 43(14), 5467-5471, **2009**.

Saeed Torkzaban, **Yongman Kim**, Martin Mulvihill, Jiamin Wan, and Tetsu K. Tokunaga, Transport and Deposition of Functionalized CdTe nanoparticles in saturated porous media, *Journal of Contaminant Hydrology*, 118(3-4), 208-217, **2010**.

Yongman Kim, Jiamin Wan, Timothy J. Kneafsey, and Tetsu K. Tokunaga, Dewetting of Silica Surfaces upon Reactions with Supercritical CO₂ and Brine: Pore-Scale Studies in Micromodels, *Environmental Science and Technology*, 46(7), 4228-4235, **2012**.

Tetsu K. Tokunaga, **Yongman Kim**, and Jiamin Wan, Aqueous Uranium(VI) Concentrations Controlled by Calcium Uranyl Vanadate, Environmental Science and Technology, 46(14), 7471-7477, **2012**.

Tetsu K. Tokunaga, Jiamin Wan, Jong-Won Jung, Tae Wook Kim, **Yongman Kim**, and Wenming Dong, Capillary pressure and saturation relation for supercritical CO₂ and brine in sand: High-pressure Pc(Sw) controller/meter measurements, and capillary scaling predictions, Water Resources Research, accepted, DOI: 10.1002/wrcr.20316, **2013**.

PATENT

U.S. Patent 8512572 B1, Granted on August 2013. Tetsu K. Tokunaga, **Yongman Kim**, and Jiamin Wan, Method of precipitating uranium from an aqueous solution and/or sediment.